DOCUMENT RESUME

ED 164 045 JC 790 052

AUTHOR Stevenson, Mike; Walleri, R. Dan
TITLE Federally Mandated Evaluation of Vocational Programs: One College's Response.
INSTITUTION Mount Hood Community Coll., Gresham, Oreg.
PUB DATE 8 Nov 78
NOTE 13p.

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS Community Colleges; Curriculum Evaluation; *Federal Regulation; *Graduate Surveys; Information Needs; Institutional Research; *Junior Colleges; Manpower Needs; Participant Satisfaction; *Program Evaluation; Relevance (Education); Technical Education; *Vocational Education; Vocational Followup

ABSTRACT

The process and findings of the evaluation of seven of the 52 vocational preparatory programs at Mount Hood Community College are described with a focus on demonstrating the feasibility, utility, and problems associated with making program evaluations meet both internal needs and federal requirements. Summaries of data collected are provided in areas of: (1) students' evaluation of course quality; (2) students' ratings of the college's efforts to advise them, prepare them for employment, and place them; (3) job relatedness ratings of programs and subsequent employment/schooling from students; (4) manpower demand and supply data from the state; (5) placement forecasts from students, employers, instructors, and division heads; (6) student job performance ratings from employers; (7) job satisfaction ratings from students; and (8) program cost data from Information Exchange Procedures. The seven programs studied were medical secretary, electronic engineering, electronic servicing, civil engineering, operating room technician, television production, and machine shop. Although data were collected which could be used as indicators of possible program modification, and the feasibility of combining internal evaluation needs with federal requirements was established, the low response rates from students and employers made statistical inference impossible. (MB)

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# FEDERALLY MANDATED EVALUATION OF VOCATIONAL PROGRAMS: ONE COLLEGE'S RESPONSE*

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by

Dr. Mike Stevenson
and
Dr. R. Dan Walleri

Research & Planning
Mt. Hood Community College
26000 S.E. Stark St.
Gresham, Oregon 97030

JC 790 052

*Note: We wish to thank Dorothy Kelley for preparing several drafts of this paper.

# Federally Mandated Evaluation of Vocational Programs: One College's Response

## I. Introduction

This paper describes the process and findings from the evaluation of seven of the 52 Vocational Preparatory programs offered at Mt. Hood Community College (MHCC). For the purposes of this study, we have focused the evaluation process on the relationship between the particular program and subsequent employment. That is, we are interested in discovering the degree to which a specific vocational preparatory program is meeting manpower demand in the community served by the college.

The evaluation process was initiated to meet the federal mandate which requires that every vocational program receiving funds through the 1976 Vocational Education Act be evaluated. Although this federal mandate is being managed by state agencies, it is ultimately the responsibility of local institutions to provide the required data for federal reporting. Further, the process and results described herein were also designed to be used within MHCC's decisions regarding program continuation, modification or abandonment. Thus, the purpose of this paper is to demonstrate the feasibility, utility, and problems associated with both the federal reporting and internal decision-making needs of program evaluation.

## II. Conceptual Foundations

Our response to program evaluation needs has been based on the previous work of Alexander (1964), Kotler (1965), and Gilmour and Beik (1978). Alexander, in "The Death and Burial of Sick Products" describes the monitoring of educational programs using indicators borrowed from product evaluation. Kotler, in "Phasing Out Weak Products", employs a data-

based approach to develop criteria for screening products. Gilmour and Beik go further by describing criteria for abandonment of academic programs as well as detailed procedures to conduct: (1) initial screening, (2) in-depth analysis, (3) institutional level review, and (4) program abandonment.

III. Program Evaluation Procedures

The process of program evaluation described herein corresponds to the "initial screening" process of the Gilmour-Beik model. As mentioned previously, the procedures were designed to meet both federal requirements and internal decision-making needs. We will first describe MHCC's program evaluation procedures, and then extend the discussion to encompass federal requirements.

The procedure began with MHCC's President determining the scope of assessment activities by identifying potential decision areas. The identified decision areas were:

(1) program continuation as is,

(2) program modification in:
  (a) curriculum objectives,
  (b) core course objectives,
  (c) faculty in-services,
  (d) faculty hiring,
  (e) equipment,
  (f) facility,
  (g) marketing activities,
  (h) student support services, or

(3) program abandonment

With these decision areas identified, the next step was to have our two instructional deans identify programs for evaluation and appoint an evaluation committee. The evaluation committee then specified the criteria and collectable data which was perceived as having the ability to

influence the identified decision areas. For example, a central decision criteria specified by the evaluation committee was the degree to which the program was meeting employment related needs. Data items regarding the program's ability to meet employment related needs were agreed upon for collection and are presented in the results section of this paper.

Elsewhere, we have described in more detail the origin of these procedures (Stevenson and Walleri, 1978). The origin was derived from our perception of the role of institutional research in program evaluation. In summary, the role of institutional research in program evaluation at MHCC is to supplement other on-going evaluation efforts with activities designed:

(1) to create and maintain a process which identifies the most appropriate "data-base" for potential decisions affecting a program,

(2) to design the appropriate data gathering machanisms,

(3) to collect the identified data from multiple sources,

(4) to summarize collected data in Program Assessment Documents (PADs) for each vocational program*

(5) to recommend a PAD distribution cycle for each program which would result in written decision recommendations from division chairpersons as well as a summary evaluation by the appropriate dean,

(6) to maintain a library of PADs, and

(7) to consult concerning the interpretation and implications of reporting data.

Although the above process was designed to meet decision-making needs internal to MHCC, the procedures also had to take into account the previously noted federal requirements. The federal requirements read in

*A separate PAD for student services evaluation was also created employing data gathered in this process.

part as follows:

> "(B) each State shall evaluate, by using data collected, wherever possible, by statistically valid sampling techniques, each such program within the State which purports to import entry level job skills according to the extent to which program completers and leavers--
>
> "(i) find employment in occupations related to their training, and
>
> "(ii) are considered by their employers to be well-trained and prepared for employment, except that in no case can pursuit of additional education or training by program completers or leavers be considered negatively in these evaluations."

The "statistically valid sample techniques" are currently being met by attempting to survey all program completers and leavers. Since mailed questionnaires were considered the only feasible method for conducting such a survey, the response rate becomes critical in generating valid statistical inferences. Our experience indicates that a low response rate can be expected, and thus, statistical inference is made problematic.

In order to satisfy points (i) and (ii) in the quoted federal requirements, data on the ability of students to find employment in occupations related to their training as well as data on employer's evaluation of the student's performance was collected. The problems associated with identifying employers will be covered in the final section of this study.

IV. Results

The following results are provided as examples of the specific data collected:

(1) Evaluation of Course Quality from Students

(2) Ratings of MHCC's efforts to advise, prepare and place for employment from students

(3) Job relatedness ratings of MHCC programs and subsequent employment

(schooling) from students.

(4) Manpower Demand and Supply data from State

(5) Placement Forecasts from students, employers, instructors and division heads.

(6) Student job performance ratings from employers.

(7) Job satisfaction ratings from students.

(8) Program cost data from Information Exchange Procedures (IEP).

This paper will summarize each of these sets of collected data as well as comment on concerns, expectations, or findings. This data was reported in separate Program Assessment Documents for each program. In each case, the number of survey (N) respondents is provided in order to specify the data source. Because of low response rates and nonrandom samplings for surveys, all findings must be considered only as possible indicators for further investigation.

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(1) Evaluation of Course Quality from Students (Rated on a scale for 1-5 with 1 being bad and 5 excellent).

| Program | Mean Score* | N |
|---|---|---|
| Medical Secretary | 3.9 | 41 |
| Electronic Engineering Tech. | 4.0 | 61 |
| Electronic Servicing Tech. | 3.6 | 49 |
| Civil Engineering Tech. | 3.8 | 106 |
| Operating Room Tech. | 4.2 | 71 |
| TV Production Tech. | 4.3 | 124 |
| Machine Shop Tech. | 4.2 | 74 |

* Combined responses from present, withdrawn, and former and graduated students.

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We first examine student evaluations of the core courses for each program. If course quality influences subsequent opportunities for employment, then programs rated highly on course quality would be expected to also rate highly on other factors. That is, we would expect Television Production, Operating Room

Room Technology and Machine Shop to rate highly on other factors.

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(2) Ratings of MHCC's efforts to advise, prepare and place for employment from students (rated on a scale from 1-3 with 1 = less than satisfied, 2 = satisfied, and 3 = very satisfied).

| Program | Mean Score Advise | (N) | Prepare | (N) | Place | (N) |
|---|---|---|---|---|---|---|
| Medical Secretary | 2.0 | (9) | 2.1 | (10) | 2.5 | (2) |
| Electronic Eng. Tech. | 1.8 | (20) | 2.3 | (24) | 1.5 | (4) |
| Electronic Serv. Tech. | 2.1 | (12) | 2.2 | (13) | 3.0 | (2) |
| Civil Eng. Tech. | 2.0 | (24) | 2.2 | (23) | 1.5 | (2) |
| Operating Room Tech. | 2.0 | (23) | 2.4 | (23) | 1.4 | (5) |
| TV Production Tech. | 2.0 | (29) | 2.6 | (31) | 2.0 | (3) |
| Machine Shop Tech. | 2.0 | (19) | 2.3 | (22) | 2.5 | (4) |

*Combined responses from former and graduated students

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This set of student responses deals with how well MHCC prepared students for employment. As can be seen from the results, Television Production, Operating Room Technology and Machine Shop were rated high in employment preparation. But, little difference was found among programs on advise given in that 5 of the programs tied at second. Both advise and placement appear to be independent of preparation and usually rated lower.

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(3) Job Relateness ratings of MHCC programs and subsequent employment (schooling) from students (rated on scale from 1-3 with 1 = unrelated, 2 = somewhat related and 3 = related).

| Program | Mean Score | N |
|---|---|---|
| Medical Secretary | 2.0 | (10) |
| Electronic Engineering Tech. | 2.4 | (12) |
| Electronic Servicing Tech. | 2.1 | (10) |
| Civil Engineering Tech. | 2.0 | (23) |
| Operating Room Tech. | 2.8 | (20) |
| TV Production Tech. | 2.5 | (19) |
| Machine Shop Tech. | 2.2 | (13) |

*Combined responses from former and graduated students.

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There does appear to be a correlation between quality of preparation and ability of students to find work in their field.

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(4) Manpower Demand and Supply data from State* (rated on scale from 1-5 with 1 = supply is much greater than demand, 2 = supply slightly more than demand, 3 = approximately even, etc.).

| Program | Mean Score |
|---|---|
| Medical Secretary | 4 |
| Electronic Engineering Tech. | 5 |
| Electronic Servicing Tech. | 2 |
| Civil Engineering Tech. | 2 |
| Operating Room Tech. | 2 |
| TV Production Tech. | 1 |
| Machine Shop Tech. | 5 |

*Statewide Analysis - 1979

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Ability of students to find related jobs does not appear to be correlated to the state's manpower demand & supply data or as measured by placement forecasts by students, employers & instructional personnel in the field. Operating Room Technology & Television Production Technology are rated the lowest with regard to manpower demand and supply and were the two highest with regard to students being able to find work in the field. Perhaps, this indicates that quality of preparation is the key factor.

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(5) Placement Forecasts from students, employers, and instructional personnel (instructors and division chairperson)(rated on a scale of 1-3, with 1 = not enough jobs, 2 = just enough jobs, and 3= more than enough jobs.

| Program | Mean Score Students | (N) | Employers | (N) | Instruction | (N) |
|---|---|---|---|---|---|---|
| Medical Secretary | 2.0 | (4) | 3.0 | (2) | 3.0 | (3) |
| Electronic Eng. Tech. | 2.7 | (9) | 2.6 | (9) | 3.0 | (3) |
| Electronic Serv. Tech. | 2.3 | (4) | 2.2 | (5) | 3.0 | (2) |
| Civil Eng. Tech. | 2.3 | (6) | 2.4 | (8) | 3.0 | (2) |
| Operating Room Tech. | 1.6 | (5) | 1.8 | (11) | 2.2 | (5) |
| TV Production Tech. | 1.4 | (7) | 1.7 | (15) | 1.7 | (3) |
| Machine Shop Tech. | 2.7 | (7) | 2.8 | (13) | 2.5 | (6) |

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Placement forecasts were generally higher from instructional personnel than from employers or students. Machine Shop Technology was the one exception to this trend.

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(6) Student job performance ratings from employers (0 = No and 1 = Yes) and ratings of program's ability to prepare students to meet job opportunities from Program Advisory Committee members (0 = No and 1 = Yes).

| Program | Mean Score Employers | (N) | Program Advisory Com. | (N) |
|---|---|---|---|---|
| Medical Secretary | 1.0 | (1) | 1.0 | (1) |
| Electronic Eng. Tech. | 1.0 | (1) | 1.0 | (5) |
| Electronic Serv. Tech. | --- | | 1.0 | (7) |
| Civil Eng. Tech. | 1.0 | (2) | .8 | (5) |
| Operating Room Tech. | 1.0 | (1) | 1.0 | (9) |
| TV Production Tech. | --- | | .7 | (14) |
| Machine Shop Tech. | 1.0 | (1) | 1.0 | (12) |

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The response rate is so bad on employer's ratings of student job performance that not much can be said. However, combining Program Advisory Committee members, who are themselves employers in the appropriate areas, with the responding employers of MHCC graduates leads to the observation that the programs were perceived as being able to prepare students for job opportunities.

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(7) Job Satisfaction ratings from students (1 = less than satisfied, 2 = satisfied, and 3 = very satisfied).*

| Program (N) | Mean Score: Salary | Chance for Promotion | Worker Fellowship | Actual Work | Location |
|---|---|---|---|---|---|
| Medical Sec. (8) | 2.3 | 1.9 | 2.8 | 2.1 | 2.0 |
| Elec. Eng. Tech. (6) | 2.5 | 2.3 | 2.8 | 2.5 | 2.3 |
| Elec. Serv. Tech. (8) | 2.0 | 2.0 | 2.8 | 2.5 | 2.3 |
| Civil Eng. Tech. (11) | 2.0 | 1.9 | 2.5 | 2.0 | 2.3 |
| Operating Rm. Tech. (16) | 1.8 | 1.4 | 2.4 | 2.7 | 2.3 |
| TV Prod. Tech. (14) | 1.6 | 1.8 | 2.4 | 2.1 | 2.1 |
| Mach. Shop Tech. (12) | 2.3 | 2.1 | 2.7 | 2.2 | 2.3 |

* Results are combined from 1974-75, 1975-76 and 1976-77 Follow-Up Studies.

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This data suggests that the Operating Room Technology and Television Production Technology students were the least satisfied with their jobs. Specifically, the Operating Room Technology and Television Production Technology students were the least satisfied with salary and promotion opportunities. The Television Production Technology students were also one of the least satisfied with actual work. Low manpower demand translates into low wages. Interestingly, the Operating Room Technology students were most satisfied with actual work.

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(8) Program Cost Data from I.E.P.

| Program | Revenue/FTE | Full Cost/FTE | Revenue-Full Cost/FTE |
|---|---|---|---|
| Medical Secretary | $1686 | $1209 | $ 477 |
| Electronic Eng. Tech. | 1593 | 2181 | -588 |
| Electronic Serv. Tech. | 1577 | 1468 | 109 |
| Civil Eng. Tech. | 1595 | 1748 | -153 |
| Operating Room Tech. | 1530 | 2784 | -1254 |
| TV Production Tech. | 1599 | 1450 | 149 |
| Machine Shop Tech. | 1599 | 1992 | -433 |

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In terms of cost, Operating Room Technology was by far the most expensive. Not surprisingly, Medical Secretary was most cost effective. Television Production Technology's relatively cost effectiveness was a consequence of the high enrollment in the program.

V. Implications and Conclusion

Internal to MHCC, the implication is that program evaluation data has been gathered which can be used as indicators of possible program modifications. While this data must not be considered as the result of conclusive research, it should be used as the best available, relatively unbiased information which displays multiple case study surveys of students and employers. Possible misuse of the data is just as dangerous as possible non-use.

External to MHCC, the implication is that while it is feasible to combine the internal program evaluation needs with federal requirements, problems exist.

The problem of low response rates makes statistical inference impossible for student surveys and especially for the employer survey. The employer survey's problematic response rate can be understood given MHCC's process of asking each graduate the name and address of their employer. This amounts to a third order response rate problem of the graduate returning his or her survey plus the less than 100% response rate on providing employer name and address plus the employer survey's response rate. One proposed solution to the employer survey problem is the use of state withholding tax information on the name and address of the employer of each and every graduate (and perhaps former students). This would give researchers only a first order response rate problem; however, this method's possible invasion of student privacy is perhaps a larger problem. Even if this withholding tax information method is legal, the possible outcry from even one graduate could significantly hurt a community college, for which survival is based on the college's ability to gain and maintain the economic support of its district residents.

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